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EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 05/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/630,915

Applicant(s)

BIDET, MONSIEUR BERNARD

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 6, 8-11, 14, and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sueyoshi (JP 07237405, of record) and further in view of Beers (US 5,491,196, of record) and Carter (US 5,807,918, of record). Sueyoshi, Beers, and Cart are applied in the same manner as set forth in Paper Number 17, Paragraph 3.

As best depicted in Figure 3, Sueyoshi discloses a tire construction in which an intermediate reinforcing layer or insulation rubber layer G is disposed between an inner elastomeric layer or innerliner 6 and a carcass ply 3, wherein said insulation rubber layer is formed of a mixture of polyisoprene rubber and a diene rubber (Paragraphs 9 and 10 of attached machine translation). In particular, Sueyoshi suggests that the diene rubber can be styrene butadiene rubber (copolymer of one or more conjugated diene monomers and one or more vinyl aromatic monomers). Although Sueyoshi fails to describe the specific styrene butadiene being used, one of ordinary skill in the art at the time of the invention would have found it obvious to use a solution polymerized styrene butadiene satisfying the quantitative relationships of the claimed invention since it represents a plurality of well known styrene butadiene rubbers that are commonly used in similar innerliner assemblies, as shown for example by Beers (Table in Columns 5

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and 6), there being no conclusive showing of unexpected results to establish a criticality for the specific styrene butadiene required by the claimed invention. Regarding the carbon black content, the single embodiment of Sueyoshi includes HAF carbon black in an amount of 50 phr (Paragraph 18). While Sueyoshi fails to include the properties of the carbon black, one of ordinary skill in the art at the time of the invention would have recognized HAF carbon black as having properties that satisfied the broad quantitative limitations of the claimed invention, as evidenced by Carter (Table 1). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to include carbon black having the claimed oil absorption and surface area since the parameters define well known and conventional carbon blacks used in tire components.

Regarding the tire construction of Sueyoshi, the reference is directed to a pneumatic tire construction that can be used for truck/buses or heavy loads (Paragraph 15). Also, the reference indicates that the carcass ply can be formed of steel cords (Paragraph 9). It is particularly noted that steel cords are extensively used in heavy load tires due to their high strength characteristics.

With respect to the quantitative limitations of the styrene butadiene, as stated above, applicant fails to provide a conclusive showing of unexpected results to establish a criticality for a styrene butadiene as defined by the claimed invention. The results of Tables 1 and 2 evidence the benefits of using a mixture of natural rubber and the claimed styrene butadiene (SBR A) as compared to solely using natural rubber or the claimed styrene butadiene. The results, however, do not compare the mixture of Tables 1 and 2 with a mixture formed of natural rubber and a styrene butadiene that does not

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satisfy the limitations of the claimed invention. Regarding Tables 3 and 4, while SBR B does not satisfy the limitations defined by claim 2, a comparison between Examples 8-10 is not persuasive in establishing a criticality for the claimed SBR. In particular, the amount of natural rubber, the type of carbon black, and the amount of zinc oxide is significantly varied between examples such that it is unclear why the benefits are realized.

Regarding claim 6, Sueyoshi includes paraphenylene diamine in an amount of 1 phr (Paragraph 18).

With respect to claim 8, the composition of Sueyoshi includes 2 phr of stearic acid. In this instance, one of ordinary skill in the art at the time of the invention would have readily appreciated the inclusion of stearic acid in slightly smaller amounts. It is well known in the tire industry that such additives are commonly added in a small amount that generally ranges between 0 and 2 or 3 phr. The example of Sueyoshi is only exemplary and as such, one of ordinary skill in the art at the time of the invention would have found it obvious to use stearic acid in amount less than 2 phr.

Regarding claim 9, the composition of Sueyoshi includes 5 phr of zinc oxide.

With respect to claim 10, the composition of Sueyoshi includes 5 phr of sulfur (Paragraph 18).

Regarding claim 11, the intermediate reinforcement layer of Sueyoshi has a thickness of 2 millimeters (Paragraph 15).

With respect to claim 14, as previously stated, it is well known in the tire industry to use solution polymerized styrene butadiene satisfying the quantitative relationships of

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the claimed invention. One of ordinary skill in the art at the time of the invention would have expected the copolymer to be initially formed and then mixed or thermochemcially worked with the polyisoprene rubber as is commonly practiced when forming a mixture.

As to claims 17-21, Sueyoshi teaches that the intermediate reinforcement layer is formed of 3-20 phr of trans 1,4 polyisoprene and 80-97 phr of another diene rubber, wherein styrene butadiene rubber (SBR) is expressly suggested as being the "another diene rubber". While Sueyoshi does suggest 2 additional rubbers besides SBR, the reference does expressly suggest the use of SBR and furthermore, SBR is one of the most common rubber components used in the tire industry such that one of ordinary skill in the art at the time of the invention would have readily appreciated a composition of polyisoprene rubber and styrene butadiene rubber for the intermediate reinforcement layer.

3. Claims 1, 2, 6-11, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori (JP 10297209, of record) and further in view of Beers and Carter. Hattori, Beers, and Cart are applied in the same manner as set forth in Paper Number 17, Paragraph 4.

As best depicted in Figure 2, Hattori is directed to a pneumatic tire construction for heavy loads comprising an innerliner 5, a carcass ply 4 formed of steel reinforcing elements, and an intermediate reinforcement layer 6a disposed between said innerliner and said carcass, wherein said layer 6a is a blend of natural rubber and an additional diene rubber, such as styrene butadiene rubber (Paragraph 6). Although Hattori fails to describe the specific styrene butadiene being used, one of ordinary skill in the art at the

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time of the invention would have found it obvious to use a solution polymerized styrene butadiene satisfying the quantitative relationships of the claimed invention since it represents a plurality of well known styrene butadiene rubbers that are commonly used in similar innerliner assemblies, as shown for example by Beers (Table in Columns 5 and 6), there being no conclusive showing of unexpected results to establish a criticality for the specific styrene butadiene required by the claimed invention. Regarding the carbon black content, Hattori suggests the use of multiple carbon blacks, such as HAF and FEF (Paragraph 7), in an amount between 40 and 65 phr. One of ordinary skill in the art at the time of the invention would have recognized the well-known carbon black fillers disclosed by Hattori (HAF and FEF) as having properties that satisfied the broad quantitative limitation of the claimed invention. For example, Table 1 of Carter suggests common properties for HAF carbon black that satisfy the quantitative relationship of the claimed invention. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to include carbon black having the claimed oil absorption and surface area since the parameters define well known and conventional carbon blacks used in tire components.

With respect to the quantitative limitations of the styrene butadiene, as stated above, applicant fails to provide a conclusive showing of unexpected results to establish a criticality for a styrene butadiene as defined by the claimed invention. The results of Tables 1 and 2 evidence the benefits of using a mixture of natural rubber and the claimed styrene butadiene (SBR A) as compared to solely using natural rubber or the claimed styrene butadiene. The results, however, do not compare the mixture of Tables

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1 and 2 with a mixture formed of natural rubber and a styrene butadiene that does not satisfy the limitations of the claimed invention. Regarding Tables 3 and 4, while SBR B does not satisfy the limitations defined by claim 2, a comparison between Examples 8-10 is not persuasive in establishing a criticality for the claimed SBR. In particular, the amount of natural rubber, the type of carbon black, and the amount of zinc oxide is significantly varied between examples such that it is unclear why the benefits are realized.

Regarding claims 2 and 15, the natural rubber suggested by Hattori would have been recognized by one of ordinary skill in the art at the time of the invention as having an extremely high cis 1,4 bond content (90-100%), and in particular well above 80%, as is common in natural rubber. It is further noted that the examiner set forth this position in the previous office action and applicant has not challenged this position- thus, it is taken that applicant has acquiesced the common high cis 1,4 bond content in natural rubber.

With respect to claim 6, Hattori includes an antioxidant in an amount of 2 phr. Although the reference fails to expressly suggest paraphenylene diamine (PPD), said diamine is a well recognized antioxidant that is extensively used in a wide variety of tire components. As such, one of ordinary skill in the art at the time of the invention would have readily appreciated the use of PPD as the specific antioxidant in Hattori.

Regarding claim 7, Hattori suggests the use of a cobalt salt in an amount between 0.1 and 2 phr (Paragraph 6).

With respect to claim 8, the composition of Hattori includes 2 phr of stearic acid (Paragraph 10). In this instance, one of ordinary skill in the art at the time of the invention would have readily appreciated the inclusion of stearic acid in slightly smaller amounts. It is well known in the tire industry that such additives are commonly added in a small amount that generally ranges between 0 and 2 or 3 phr. The example of Hattori is only exemplary and as such, one of ordinary skill in the art at the time of the invention would have found it obvious to use stearic acid in amount less than 2 phr.

Regarding claim 9, zinc oxide is included in an amount of 6 phr (Paragraph 10).

With respect to claim 10, sulfur is included in an amount between 4 and 7 phr (Paragraph 7).

Regarding claim 11, Hattori suggests a thickness for the rubber layer a between 0.5 and 1.5 phr (Paragraph 9).

With respect to claim 14, as previously stated, it is well known in the tire industry to use solution polymerized styrene butadiene satisfying the quantitative relationships of the claimed invention. One of ordinary skill in the art at the time of the invention would have expected the copolymer to be initially formed and then mixed or thermochemcially worked with the polyisoprene rubber as is commonly practiced when forming a mixture.

Regarding claims 16-19, Hattori suggests an intermediate reinforcement layer composition formed of 70-100 phr of natural rubber and 0-30 phr of an additional diene rubber, such as styrene butadiene rubber. While Hattori does suggest a few additional rubbers besides SBR, the reference does expressly suggest the use of SBR and furthermore, SBR is one of the most common rubber components used in the tire

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industry such that one of ordinary skill in the art at the time of the invention would have readily appreciated a composition of polyisoprene rubber and styrene butadiene rubber for the intermediate reinforcement layer.

4. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of (a) Sueyoshi, Beers, and Carter or (b) Hattori, Beers, and Carter as applied in claim 1 above and further in view of Materne (US 6,156,822, of record). The references are applied in the same manner as set forth in Paper Number 17, Paragraph 5.

In describing the composition of the intermediate reinforcement layer, Sueyoshi and Hattori fail to suggest the use of additional filler components (in addition to carbon black), such as silica or modified carbon black, wherein surface-active groups (silica or aluminum) are present. In any event, it is extremely well known in the tire industry to include multiple reinforcing fillers in tire rubber compositions and furthermore, to modify the surfaces of either individual or multiple filler assemblies with hydroxy groups. For example, Materne describes a tire rubber composition in which fillers such as carbon black, precipitated silica, and other filler containing hydroxyl groups on their surface (e.g. aluminum doped precipitated silica and modified carbon black) are included (Column 5, Lines 9-14). The use of both silica and carbon black allows a given rubber composition to have enhanced reinforcement capabilities since the benefits of each filler can be realized. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to form a reinforcing assembly with (a) carbon black and doped silica (AlOH or SiOH) or (b) modified carbon black with AlOH or SiOH. It should

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be noted that the use of surface agents is not limited to the tread portion since the increase in reinforcement capability is desired in all tire rubber components, including the intermediate layer of Sueyoshi and Hattori. As to the amount of reinforcing filler in the intermediate reinforcement layer, Sueyoshi and Hattori specify the use of approximately 50 phr of carbon black as the primary filler, suggesting that the use of an additional, well known reinforcing filler would be in amount less than 50 phr.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over either one of (a) Sueyoshi, Beers, Carter, and Materne or (b) Hattori, Beers, Carter, and Materne as applied in claim 3 above and further in view of Nakamura (US 6,333,375, of record). The references are applied in the same manner as set forth in Paper Number 17, Paragraph 6.

In this instance, the use of a secondary filler (silica having surface-active agents) in either Sueyoshi or Hattori would have been obvious to one of ordinary skill in the art at the time of the invention, as evidenced by Materne. While Materne fails to describe the BET specific surface area for the secondary fillers, the range of the claimed invention is extremely broad and defines conventional values for silica compounds used in the tire industry, as evidenced by Nakamura. In this instance, Nakamura suggests a silica filler having a preferred BET range of 100 to 250 m²/gram, more preferably 120 – 190 m²/gram (Column 12, Lines 21-32). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include silica with the claimed BET surface area since the limitations of the claimed invention define well-known silica fillers that provide the necessary reinforcement capability.

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6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sueyoshi, Beers, and Carter as applied in claim 1 above and further in view of King (US 3,563,928, of record) and optionally in view of Hattori. The references are applied in the same manner as set forth in Paper Number 17, Paragraph 7.

In describing the intermediate reinforcement layer, Sueyoshi suggests the use of a plurality of well known additives, including but not limited to sulfur, stearic acid, and antioxidants. However, Sueyoshi fails to suggest the use of a metal salt (cobalt, nickel, or iron) selected from the group consisting of (a) organic salts or (b) hydroxides in amount between 0.03 and 3 phr. In any event, metals salts represent a well-known additive that is conventionally used in tire rubber compositions to improve tackiness or adhesion characteristics, as evidenced by King (Column 2, Lines 10-14 and Lines 30-40). In particular, King discloses the use of an organic salt in the amount of 0.5 to 10 phr, which incorporates nearly the entire range of the claimed invention. Hattori is optionally applied to illustrate the known use of such additives in innerliner assemblies, it being noted that the additive is included in amount between 0.1 and 2 phr, which falls entirely with the range of the claimed invention. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a metal salt in the intermediate reinforcement layer of Sueyoshi, in view of King and optionally Hattori, for the benefits of improved tack. It should be lastly noted that the intermediate layer of Sueyoshi functions as a bonding agent for the innerliner and the adjacent rubber and as such, enhanced tack would be especially desirable

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7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over either one of (a) Sueyoshi, Beers, and Carter or (b) Hattori, Beers, and Carter as applied in claim 1 above and further in view of Gros (US 3,884,993, of record). The references are applied in the same manner as set forth in paper Number 17, Paragraph 8.

In describing the intermediate reinforcement layer, Sueyoshi and Hattori describe the inclusion of carbon and additional well-known additives. While the references fail to expressly describe the use of kaolin (clay), kaolin is an extremely well known and conventional reinforcing filler that is extensively used in the tire industry, as shown for example by Gros (Column 6, Lines 38-47). In particular, it is known to include multiple reinforcing fillers, such as carbon black and kaolin, to optimize a wider range of properties/characteristics, including modulus and cost. Furthermore, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the use of kaolin in the intermediate rubber composition and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to include kaolin in the intermediate rubber composition of Sueyoshi and Hattori for the benefits detailed above.

Response to Arguments

8. Applicant's arguments filed April 7, 2004 have been fully considered but they are not persuasive. Applicant contends that neither Sueyoshi nor Hattori teach combining a polyisoprene having a majority of chains with cis 1,4 bonds with a solution copolymer of diene and vinyl aromatic monomers (e.g. SBR) as presently claimed. Furthermore, applicant argues that none of the examples in Sueyoshi and Hattori teach a rubber

composition having the above noted components. Lastly, applicant contends that the rubber composition of Beers is for an innerliner, not an intermediate reinforcement layer, and as such, the teachings of Beers are not combinable with the composition of Sueyoshi or Hattori.

As correctly set forth by applicant, the compositions of Sueyoshi and Hattori both contain a polyisoprene component (e.g. natural rubber) and an additional diene component. In each instance, styrene butadiene is expressly suggested as a possible rubber for the additional component. The references do not contain an exhaustive list of rubbers for the additional diene component but rather contain a couple of the extremely well known rubber components in the tire industry. Thus, the disclosures of Sueyoshi and Hattori actually only teach the use of 4 or 5 possible blends. One of ordinary skill in the art at the time of the invention would have readily appreciated the use of SBR as the additional diene rubber since it is expressly suggested by each reference and represents one of the most well known and extensively used rubber components in the tire industry. It is agreed that the limited examples in Sueyoshi and Hattori do not expressly teach a composition having styrene butadiene rubber; however, a fair reading of the disclosures as a whole would have lead one of ordinary skill in the art at the time of the invention to form the composition of either Sueyoshi or Hattori from polyisoprene rubber and styrene butadiene rubber.

With respect to Beers, it is agreed that the composition is for an innerliner and not an inner layer reinforcement. However, the reference was applied to illustrate the common use of SBR having the claimed properties in similar innerliner assemblies, not

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to suggest the use of the specific composition of Beers in the inner layer reinforcement of either Sueyoshi or Hattori. The claimed invention, as currently drafted, defines a plurality of possible SBR compositions- Beers provides one example of a similar tire component (disposed adjacent one another and part of inner reinforcement assembly) having an SBR that satisfies the limitations of the claimed invention. It is further noted that applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed SBR.

As to the properties of the carbon black, Sueyoshi and Hattori expressly teach the use of specific carbon blacks that are recognized as having absorption values and surface areas that are consistent with the broad ranges of the claimed invention, as shown for example by Carter. It is emphasized that while Carter discloses a wide variety of carbon blacks that might not be useful in the inventive concept, this reference is not applied to identify what carbon black is used but rather to evidence the well-known properties of the carbon blacks listed in Sueyoshi and Hattori.

Lastly, with respect to the data submitted in Tables 2 and 4, the experiments fail to provide an accurate comparison between a rubber composition having polyisoprene rubber and the claimed SBR and a rubber composition having polyisoprene and SBR that does not satisfy the claimed invention. In particular, test 8 cannot be accurately compared to tests 9 and 10 since the amounts of natural rubber are different, the types of carbon black are different, and the amount of zinc oxide is different. Thus, while the data for tests 9 and 10 demonstrate improved tire properties, it is unclear if they should be attributed to the specific SBR or additional elements of the composition. To provide

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a clear showing of unexpected results, it is suggested that the above noted compositions be tested such that the only variable between the compositions is the type of SBR.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone

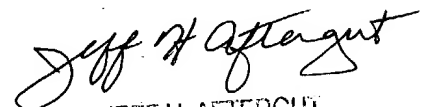
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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Justin Fischer

May 22, 2004


JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300